GUIDE TO NATIONAL INSTITUTIONAL SURVEY

In the context of the Convention on Biological Diversity

UNEP

WORLD CONSERVATION MONITORING CENTRE

March 1998

The United Nations Environment Programme (UNEP) has as its mission "to provide leadership and encourage partnerships in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations".

The World Conservation Monitoring Centre (WCMC), based in Cambridge, UK, is a joint venture between three partners in the World Conservation Strategy and its successor Caring for the Earth: The World Conservation Union (IUCN), UNEP and the World Wide Fund for Nature (WWF). The Centre provides information services on the conservation and sustainable use of species and ecosystems and supports others in the development of their own information systems.

UNEP

WORLD CONSERVATION MONITORING CENTRE

Cover photos: UNEP

Layout & Printing: Reproduction &Distribution Section / United Nations Office at Nairobi

This activity was funded by the Global Environment Facility

Citation: United Nations Environment Programme: World Conservation Monitoring Centre. 1997. National Institutional Survey Guide for Biodiversity Data Management in the context of the Convention on Biological Diversity.

ISBN: 92-807-1700-6

For additional copies of this document or further information please contact: The Task Manager, Biodiversity Data Management (BDM) Project, United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

19664

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF BOXES

ACKNOWLEDGEMENTS

This document is one of a series commissioned by the United Nations Environment Programme (UNEP) under project GF/0301-94-40 (GF/0301-94-06), and funded by the Global Environment Facility (GEF).

The Guide was prepared by the World Conservation Monitoring Centre (WCMC), in collaboration with UNEP, the Biodiversity Data Management (BDM) Project Advisory Panel and the national BDM committees in the Bahamas, Chile, China, Costa Rica, Egypt, Ghana, Kenya, Papua New Guinea, Poland and Thailand. Several of these countries provided valuable reviews of the initial draft based on their actual experiences in implementing an institutional survey.

Many of the concepts introduced in this document were developed with support from the United Kingdom Darwin Initiative. The document has also benefited from related initiatives supported through the European Union and the European Environment Agency (EEA).

BACKGROUND

The Convention on Biological Diversity was signed at the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992 by 154 nations and subsequently came into force in November 1993. Article 7 of the Convention is concerned with identification and monitoring activities to support Articles 8–10 (*in-situ* conservation, *ex-situ* conservation and sustainable use of components of biological diversity). Contracting parties are required to identify components of biological diversity important for conservation and sustainable use (Article 7 (a); to identify activities likely to have adverse impacts (Article 7 (c); and to monitor the status of both components and threats (paragraphs (b) and (c) of (Article 7). Specifically, Article 7 (d) identifies the requirement to: "Maintain and organize, by any mechanism, data derived from identification and monitoring activities".

In response to this requirement a project was initiated by UNEP and WCMC to facilitate the building of national capacity for biodiversity data management and exchange, as required by the Convention. One of the outputs of the GEF-funded Biodiversity Data Management (BDM) project is a set of supporting materials designed to raise the profile of biodiversity information in decision-making processes and help countries produce the necessary information for biodiversity strategies and action plans. The materials, which were prepared by WCMC, comprise:

- *Guide to Information Management*

  Recognizing that biodiversity information depends on access to data from many and varied stakeholders, this document examines the organizational issues associated with establishing effective cooperation. A step-by-step information cycle is proposed, comprising agreement on priority issues, determination of information needs, design of information products, agreement of stakeholder roles, and enablement of stakeholders to ensure that information is produced in a cost-effective manner. A participatory approach is emphasized as a means of ensuring transparency in information usage.

- *Guide to National Institutional Survey for Biodiversity Data Management*

  The Guide to National Institutional Surveys for Biodiversity Data Management—the present document —is concerned with the development of information management capacity, particularly as applied to networks of organizations with common information goals. Techniques for assessing the capacities and needs of organizations are examined, with the aim of reducing duplication of effort, enhancing cooperation and identifying areas for investment. The text is equally relevant to developed and developing countries. The examples in this document relate mainly to national-level surveys where, for example, a biodiversity information network or other major programme or project is being implemented. In some countries, however, (particularly large ones), it may be more appropriate to conduct the survey at the sub national scale.

- *Electronic Resource Inventory*

  This product, which is provided as a readily searchable electronic publication, provides reference materials on software, hardware, methodologies, standards, common practices, data sources and key organizations relating to biodiversity data management. Its major objective is to document the growing array of standards in biodiversity data and, where these are yet to emerge, to provide case-studies or pointers to further information sources, such as lead institutions, bibliographical references and Internet addresses.

1 INTRODUCTION

1 INTRODUCTION

The phrase 'information management capacity' means different things to different people. To some, it applies only to the hardware and software necessary to build databases and information systems. To others, it encompasses the political commitment, constructive policies and public support necessary to apply information to the resolution of environmental concerns. This document employs a pragmatic definition of information management capacity, namely, the direct assets available to an organization in terms of its data, expertise and facilities, and indirect assets in the form of management systems and partnerships with other organizations (see box 1).

Direct assets are relatively easy to quantify, since they are physical in nature and can be documented. Indirect assets, which serve to consolidate the direct assets, are more subjective in nature. For example, two organizations with roughly similar data, expertise and facilities may perform very differently owing to variations in the quality of their management systems, although it may be difficult to quantify exactly why. An organization's management systems dictate the efficiency of everything from task allocation and scheduling, to project design, strategic planning and cooperation with external partners. If the systems work, then all of these aspects run smoothly; if they don't, then productivity may suffer.

Constraints in information management capacity can seriously impede progress towards organizational goals, limiting the contribution that the organizations are able to make to addressing environmental concerns. Considering the magnitude of the challenges affecting most countries in this area, building information management capacity can be seen as an issue of national importance. It is almost inevitable, however, that 'needs' for capacity-building will outweigh what can be delivered with available resources. This applies to individual organizations and networks alike, and equally to governmental, non-governmental and private organizations. Clear priorities for capacity building are needed, and the greatest challenge is deciding how and where to channel investments.

Taken as a whole, the capacity of a network of organizations depends on the individual capacities of its partner organizations. Thus, when attempting to strengthen the capacity of a network to manage information effectively, typical aims are to address critical gaps in capacity, to supplement (not duplicate) existing capacities, and to seek greater efficiency through closer cooperation between the organizations concerned. These are strategic aims and, consequently, require strategic planning.

Box 1: Elements of information management capacity

Direct assets
- Comprehensive data on appropriate themes
- Expertise and facilities to store, maintain and quality-assure data
- Expertise and facilities to integrate, interpret and convert data into information
- Expertise and facilities to compile and communicate information to users

Indirect assets
- Management systems and procedures to coordinate information production
- Liaison, cooperation and partnerships with external organizations

Clearly, investments in capacity-building should, wherever possible, be based on a survey of where existing capacities are located and how readily these can be mobilized for specific tasks. This can be achieved by assessing the capacity of the network's partner organizations, for instance with respect to the range and quality of the datasets they manage, the human resources which they possess, and their ability to access technical and physical facilities.

The survey contributes directly to the process of strategic planning, which involves identifying which types of capacity are critically lacking, which are in need of strengthening, and which areas would benefit from closer cooperation. This allows objectives, targets, roles and responsibilities to be assigned to organizations in such a way that their goals are achieved in concert with the needs of the network—and society in general—for information. The main justification for the effort expended on this process is to provide enhanced support to users, such as decision-makers in the public and private sectors.

A diverse range of tasks is covered by the phrase 'information management', and most organizations will take considerable time to achieve their maximum level of effectiveness in this area. Ways need to be found to accelerate this process for the benefit of the organizations concerned, and also the networks in which they operate. Efforts to build information management capacity need to be carefully prioritized. They also need to be well-coordinated. Within an organization this is the responsibility of senior mangers; within a network it is normally achieved through a steering committee plus associated administrative support (collectively known as a hub—see *Guide to Information Management*).

Figure 1: Building information management capacity

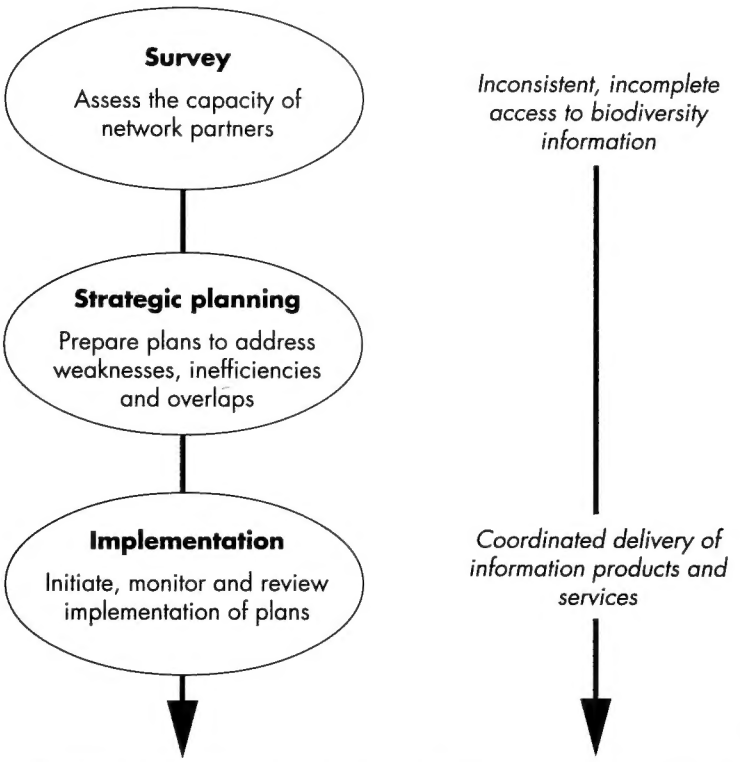


Figure 1 presents a three-stage process for building information management capacity within a network. The process assumes that the network's goals have already been defined and that the information needs of its user base have been determined; in short, that the network is being effectively coordinated and managed. The aim is to transform a situation in which biodiversity information is inconsistently handled, incomplete in coverage and difficult to access, into one in which relevant and timely information products are available to defined sets of users.

INSTITUTIONAL SURVEY

2 INSTITUTIONAL SURVEY

2.1 Overview

When large numbers of organizations are involved in a survey, it may become very demanding in both cost and time. From the design of the questionnaire to the analysis of the final results, a survey conducted at the national level, for example, covering upwards of 50 organizations, could take up to six months to complete. For this reason, it is essential to engage the full support and resources of the network's partners, by making it clear to them why the survey is being conducted and how it will be used to benefit them. Specifically, participating organizations can expect to:

- Develop ties with other organizations;
- Help plan the development of the network;
- Understand better where to obtain data and information on complex, cross-sectoral issues, such as conservation and sustainable use of living resources; and
- Review (and, where possible, address) internal strengths and weaknesses in information management capacity.

To ensure that the survey is taken seriously, it also needs to be recognised as being completely impartial (i.e., beneficial to the network as a whole, not just to specific organizations). Thus it is desirable for the survey to be overseen, if not actually implemented, by a steering committee, body or other group which represents the interests of the network's partners (e.g., a network hub). This group can be entrusted with the task of initiating the survey and ensuring that its results are employed to the maximum effect.

In many cases, a comprehensive survey of capacity may be unnecessary. The main requirement is to determine the availability of necessary capacities, rather than all capacities, some of which may not be needed. A key question to bear in mind when conducting the survey is 'what capacities will be needed by the network to deliver its goals?' as well as the more elementary question 'what capacities currently exist?'.

2.2 Factors to assess

The survey should empower managers to review and, perhaps, restructure their information management activities in such a way that their corporate goals are consistent with those of the networks in which they operate. It should address all of those capacities outlined in box 1, plus additional capacities, where these are relevant or specific to local conditions. Aspects of an organization which should be considered for inclusion in the survey are summarized below (these are expanded in the sample questionnaire presented in annex 2).

- **Institutional details**

  Basic institutional details should be recorded, for example, the full name (with acronym if applicable), address and further contact details. The overall mission of the organization, plus details of specific programmes and projects, should be described in so far as they relate to the network's goals. In particular, brief suggestions on how the network is expected to contribute to the organization, and *vice versa*, should be solicited. Finally, details of the individual or group completing the survey should be obtained, for example, their role within the organization, and their contact details for follow-up purposes.

- **Direct assets**

  1. **Datasets**

     Summaries of the datasets for which the organization acts as custodian, for example, their theme, scale, completeness, currency, reliability, precision and pricing strategy, plus an indication of how they were collected, their intended uses, and the data standards and quality-assurance procedures which have been employed. Particularly important datasets (i.e., essential datasets – see *Guide to Information Management*) should be highlighted, as should priority data needs.

2. **Expertise**

   Descriptions of the expertise available to the organization which is of most relevance to information production, for example, the number and education or training level of researchers, data managers, librarians, statisticians, analysts, designers, publishers or communicators. Particularly strong or relevant expertise should be highlighted, as should priority needs.

3. **Facilities**

   Descriptions of the main facilities accessible by the organization to enhance information production, for example, measuring equipment, computer software and hardware, data input and output devices, and physical facilities (e.g., dedicated premises, transport). Particularly useful or relevant facilities should be highlighted, as should priority needs.

- **Indirect assets**

1. **Management systems**

   The best evidence for effective management systems is productivity, and a good means of measuring productivity is by reviewing the organization's portfolio of projects as they relate to the provision of data and information to users. Particularly impressive or illustrative projects should be highlighted. Weaknesses in management systems, where these are widely recognized, should also be described.

2. **Partnerships**

   Memoranda of understanding provide indirect evidence of external partnerships, although these do not in themselves guarantee cooperation. Further indicators include the extent to which data and other commodities are shared with other organizations (e.g., lists of data sources), the number of joint projects, and the degree to which common standards and policies for information management are employed. Organizations should be encouraged to prepare diagrams illustrating the nature of their linkages with other organizations, in particular those which involve the transfer of data and information (see section 3.4). Productive partnerships should be highlighted, and weak ones also noted.

2.3 Method of assessment

One of the earliest tasks for the group undertaking the survey is to define its scope, in terms of both the number and type of organization to include. In the simplest case, this may be the membership of an existing network focused on conservation or environmental issues. Under such circumstances, it may be desirable, nevertheless, to include additional organizations—both nationally and abroad—where these have important contributions to make (e.g., data holdings).

Where no existing network is established, a policy of inclusion is normally the best strategy. This may lead to a larger, more diverse survey, but should avoid the possibility that some organizations will feel neglected. In countries with rich institutional structures, where a policy of inclusion would lead to an impractically large workload, the survey may be conducted in two stages. Initially, a letter of invitation is delivered to all potential organizations, explaining the purpose of the survey and inviting them to decide whether they would like to participate. The letter may also invite each organization to describe briefly how it expects to help mobilize biodiversity information. Many organizations will decide not to participate at this point, saving both themselves and the survey team much work at a later date.

Once the task of selecting organizations has been completed, the next challenge is to identify specific people within them to take charge of the survey. These people are sometimes referred to as focal points. Various options are then available for implementing the survey. The simplest option is to produce a questionnaire and distribute this to focal points in the selected organizations. The main problem with questionnaires is that they have a notoriously poor response rate. Various techniques exist to improve this (see section 2.4) but, even when these are employed, the response rate still may be too low to be effective. Some form of active engagement of the organizations is usually necessary. Various suggestions are presented below.

- Before distributing the questionnaires, invite participants to a workshop to discuss the purpose, time-scale and method of completion of the questionnaire.

- Telephone or visit each of the selected organizations after the questionnaires have been distributed, or invite them to a 'surgery' where their reservations or difficulties can be addressed.

After most of the questionnaires have been returned, invite participants to a further workshop to review the survey's findings, and consider how these can be transformed into strategic capacity-building plans.

In complex cases, more intensive site visits will be necessary to assist with the completion of the questionnaires. For instance, it may be necessary to organize individual or group meetings, brainstorming sessions and other forums, in order to generate the required level of commitment. Interactive dialogue is especially useful when addressing the more subjective aspects of the survey, such as the requirements the organization has of the network, or the success of its external partnerships. Ideally, the survey encourages staff to review their personal and corporate strategies with respect to information management and consider how greater efficiency can be achieved.

2.4 Questionnaire tips

Typically, the response rate to be expected with a questionnaire sent out 'blind'—without any forewarning, involvement or contribution by the receiving organization—is less than 10%. This figure can be substantially improved by anticipating the problems which may occur. One of the simplest ways of improving response rate is to ensure that the questionnaire is written in an appropriate language. Naturally, this applies mainly to international surveys, but also applies to individual countries where multiple languages are spoken. Further ways to improve response rate are described below:

- **Generate interest**

  Organizations are unlikely to commit a lot of time to filling out questionnaires, unless tangible benefits will be gained. Benefits should therefore be made explicit in a covering letter, together with an indication of why the involvement of the organization is essential to the survey. Annex 1 presents a sample covering letter based on several excellent examples drawn from surveys conducted world-wide (for example, see Government of the United Kingdm 1995 or Government of Sri Lanka 1996a). Where possible, questionnaires should be sent to a specific unit or individual focal point in the organization who can be relied upon to take appropriate action.

- **Make it brief**

  Questionnaires should be kept as short as possible and should remain focused on questions which directly support the network's developmental goals. Wherever possible, questionnaires should be completed as far as possible before they are distributed (e.g. the name and address of the organization is already printed). It is far easier for recipients to correct existing data than to enter details from scratch and this approach is more likely to bring results.

- **Make it clear**

  The thematic scope of the survey should be made clear, the questions simple, and jargon or confusing terms avoided. For example, the term 'biodiversity' would need to be defined since it commonly has several meanings, including all lifeforms, the diversity of lifeforms, or simply the conservation of living resources. A good method of clarifying how the questionnaire should be completed is to include an 'example' questionnaire which has already been filled out by another, perhaps fictitious, organization.

- **If all else fails...**

  On rare occasions, questionnaires will not be returned owing to the respondents lethargy, low priority accorded to the exercise or their suspicion of the motives for the questionnaire. One solution is to publish an interim set of survey results showing blanks where organizations did not respond. When these are sent to the organizations concerned, accompanied by details of a final publication date, a rapid response may be forthcoming, since few organizations would wish to be seen as uncooperative.

ANALYSING THE RESULTS

3 ANALYSING THE RESULTS

3.1 Overview

The results of the survey can be analysed in a number of ways, depending on the circumstances in which it is conducted and the requirements placed on it by the lead organization. In general, the analysis should profile the organizations concerned in such a way that capacity-building activities can be planned in a consistent and transparent manner. This is especially true if the analysis is to be used to allocate or redistribute resources, for instance, financial resources. Typical outputs from the analysis include a status report, a dataset catalogue and a summary of institutional partnerships.

It is tempting to see the survey results as a pool of data suitable for statistical analysis. For example, one might determine that 43% of the organizations surveyed were equipped with the Windows operating system, whereas only 10% were equipped with UNIX. Similarly, one might determine that 15% of organizations managed biological datasets, whereas only 5% managed data on human social conditions. While these statistics help identify general trends across many organizations, they do not assist significantly with the planning process. Indeed, the main reason for conducting the survey is to determine the capabilities and needs of individual organizations, to enable strategic planners to identify specific investments, efficiencies and areas for increased cooperation.

3.2 Status report

At minimum, the main results of the survey should be summarized in a report suitable for distribution to participating organizations. This injects transparency into the survey process and compensates organizations for the effort the organizations have put in to completing the questionnaires. If successful, the status report could be updated on a regular basis and form the main vehicle for documenting the growth of the network.

Simple diagrams, maps, charts and tables may be used to express how information management capacity is distributed across the organizations surveyed. Typical questions that the report may wish to address include:

- What range of datasets is available to the network and in which areas are data lacking?
- What (if any) standards are applied to the collection, storage and quality-assurance of data?
- What expertise is available and in which areas do the greatest shortages occur?
- What range of facilities is available and what specific facilities are needed?
- Which facilities are in common use across the network (e.g., software and hardware, laboratory equipment, communications facilities)?

In addition, the status report highlights areas of duplicated effort, areas requiring closer cooperation and under-utilized capacities which could be mobilized in support of the network's goals. These topics could be covered within a more comprehensive discussion of the network's strengths and weaknesses, which might also summarize the productivity (or otherwise) of the partnerships between individual organizations. Narrative text, as opposed to charts and tables, is usually the best form in which to present these more subjective assessments of information management capacity[1].

Optionally, the status report should also contain specific plans for developing information management capacity (e.g., investments, efficiencies and cooperation). This is the realm of strategic planning (see section 4), where available capacity is compared with what is needed to enable the network to deliver relevant and timely information products to its user base. The actual survey data, if presented at all, should be consigned to annexes or included as a separate volume. Naturally, an executive summary should be prepared to highlight the report's key findings.

3.3 Dataset catalogue

Potentially the most useful output of the survey is a catalogue or directory of datasets (Medyckyj-Scott *et al.* 1996). This helps users to locate the data and information they require, and provides sufficient description for them to decide whether or not the dataset is appropriate to their needs (for example, see WCMC 1994 or Government of Sri Lanka 1996a). If a dataset catalogue is to be generated from the survey results, it is suggested that a separate form is prepared

[1] Ample time should be provided for participating organizations to review the report before it is published and distributed widely.

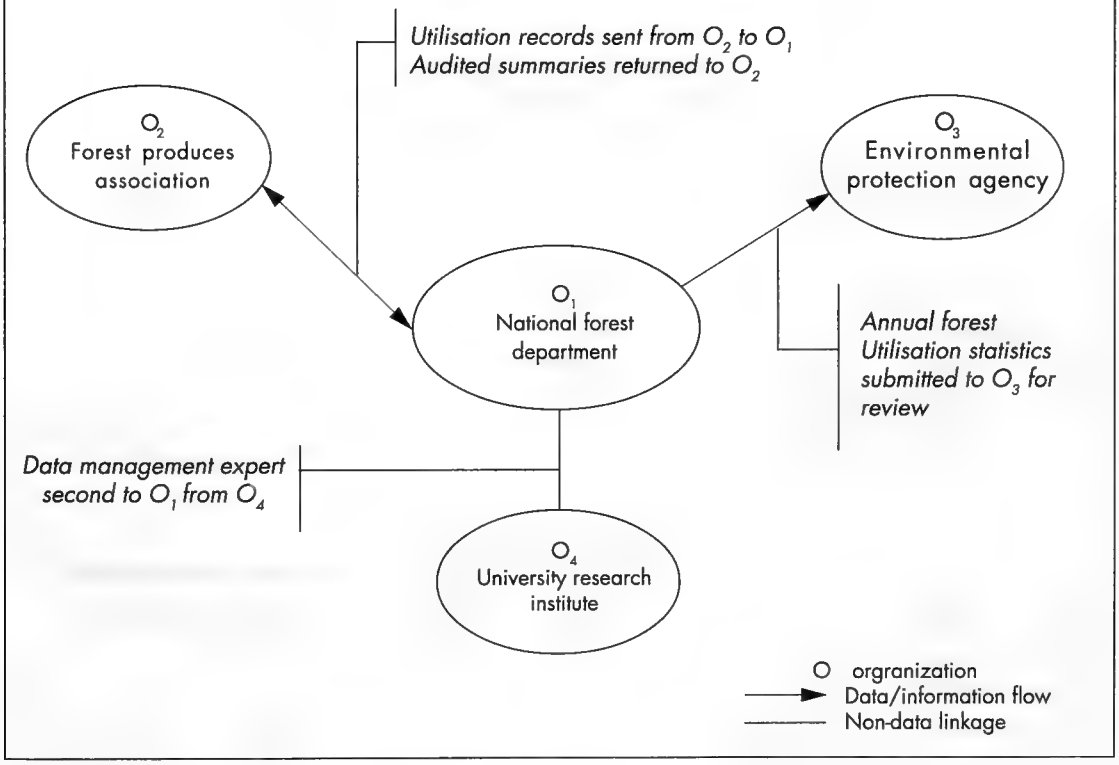
for describing datasets. If this is done, the dataset catalogue can be assembled easily by collating and editing the dataset forms when they are returned, without needing to extract this information from lengthy institutional details (see annex 2). Naturally, brief details of the custodian should be included on each such form to facilitate access to the data by prospective users.

Not all datasets described in the questionnaires need to be included in the catalogue. For example, there is little point including those which, for reasons of corporate policy or lack of capacity, are not physically accessible to external users. In addition, datasets which are so specialized that they have little bearing on the network's goals may be excluded. The aim is to create a catalogue that presents a set of useful datasets, as opposed to an exhaustive list. This, together with accuracy, will build the reputation of the catalogue. In summary, the following questions should be asked of the final catalogue:

- Does it enable users to locate datasets easily?
- Are all the listed datasets relevant to the network's goals?
- Are all the listed datasets accessible?
- What mechanism has been established to keep the catalogue up to date?

Dataset catalogues can be published in several ways, for example as hard-copy publications, as computerized databases or as an on-line information service, and may be disseminated widely to promote their use (electronic versions are often referred to as meta-databases, since the raw data are meta-data or, literally, data about data). As the profile of the catalogue rises, and it becomes the main method by which users locate data, many organizations will wish to submit new details to keep the catalogue up to date. In this way, the catalogue can become virtually self-sustaining, rather than relying on specific project funds or donations.

Figure 2: Example linkage diagram



3.4 Analysis of linkages

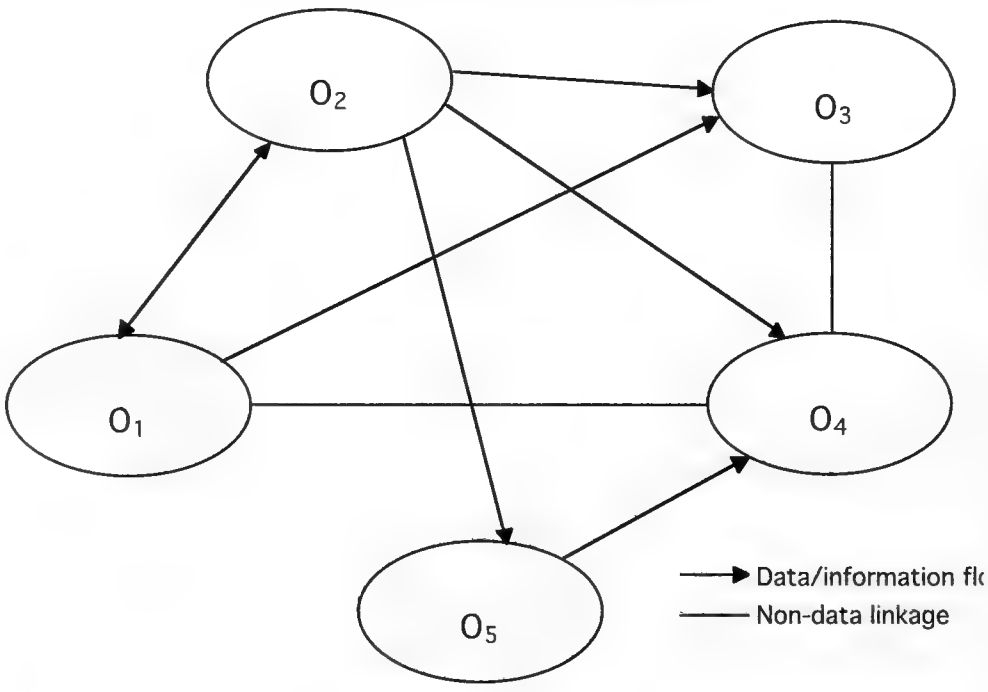
Cooperation between organizations, variously referred to as linkages, ties, partnerships and collaborations, can be represented with the use of special-purpose diagrams, such as the one shown in figure 2. The diagrams follow a convention by which organizations are represented by ovals and paths of data flow by arrowed lines. Standard lines depict other types of cooperation, such as the sharing of expertise or facilities. Labels expressing the general nature of the cooperation may be used to clarify the diagram as shown.

Figure 2 illustrates how a national forestry department (labelled O_1 in the diagram) views its linkages with other selected organizations. In this case, it receives data from the forest producers association (O_2), an industry body, and provides data back to this organization and the environmental protection agency (O_3). A non-data linkage is maintained with a university research institute (O_4), in this case involving the secondment of a member of staff.

Similar diagrams could be produced by all those organizations participating in the survey, revealing interesting inconsistencies when two organizations perceive their interrelationships in different ways. For example, in the current case O_1 may illustrate its provision of data to O_3 (see figure 2), but the latter may not recognize this if the supply is uninformative or unreliable.

As well as providing a good opportunity for self-assessment within an organization, linkage analysis can be applied at the network level to reveal areas requiring closer cooperation, or areas where there may be duplication of effort. To do this, the linkage diagrams produced by individual organizations must be reviewed, harmonized and merged into a single composite diagram, such as that shown in figure 3. This may involve significant dialogue between the organizations concerned, as they agree a common position on the nature of their linkages (each linkage in the composite diagram should be acknowledged to be correct by both parties).

Figure 3: Composite linkage diagram



The composite diagram is a useful way of summarizing the linkages between a group of cooperating organizations. When large numbers of organizations are involved, however, the diagram can quickly become overloaded. Thus, for clarity, it may be necessary to separate it into a series of simpler diagrams representing cooperation on specific themes.

Composite diagrams can be interpreted in several ways. For example, organizations which generally supply data may be important custodians. Organizations which generally receive data may be important users; and organizations which generally maintain non-data linkages may be important facilitators of the information production process (see *Guide to Information Management*). Notable absences of cooperation are equally revealing, particularly between organizations which are known to possess similar goals (and may be duplicating each other's efforts) or have complimentary skills and equipment which could be shared. In summary, linkage analysis clarifies where cooperation is occurring and, also, where it could be occurring.

STRATEGIC PLANNING

4 STRATEGIC PLANNING

4.1 Overview

Having assessed the distribution and quality of existing capacity, the next step is to create plans for the development of new capacities to achieve organizational and network goals. The survey prepares the ground for this endeavour, ensuring that these plans reflect the true needs of participating organizations for investment and cooperation.

The results of the survey are not the only source of information needed for strategic planning. Indeed, the reason why the process is referred to as strategic is that the new capacities which the network builds are intended to address its long-term, collective needs, as well as the immediate priorities of individual organizations. For this reason planning is guided not only by the results of the survey, which highlight areas in which capacity-building may be required, but also by the results of earlier processes which have identified the overall goals of the network (the processes in question are amply described in the 'information cycle' introduced in the *Guide to Information Management*). Active consultation and consensus-building may be necessary to determine the network's goals, which should translate into the definition of a series of priority products and services for the network to deliver to its users (see *Guide to Information Management*).

In the case of a biodiversity information network operating at the national level, the main goal may be to support government policy-making in the area of sustainable use of living resources. This may translate into a series of one-off information briefings on current issues of concern (i.e., products), plus a commitment to ensure continuous monitoring of agreed ecological parameters (i.e., a service). A complementary goal of the network may be to reduce the loss of sensitive habitats through ill-informed development planning. This may translate into a series of map-based products illustrating the location and value of sensitive habitats, for use by construction companies and local authorities.

Once the network's products and services have been agreed, it is possible to analyse what capacities are required to deliver them, for instance in terms of essential data, expertise and facilities. This process is very important since it sets targets for capacity-building across the network which, once reached, enable it to achieve its goals effectively. Strategic planning then becomes a relatively simple task: match the capacities outlined in the survey to those required, and prepare a strategy to move forward (see figure 4). As with other strategic exercises, this process can be summarised in terms of three underlying questions as follows:

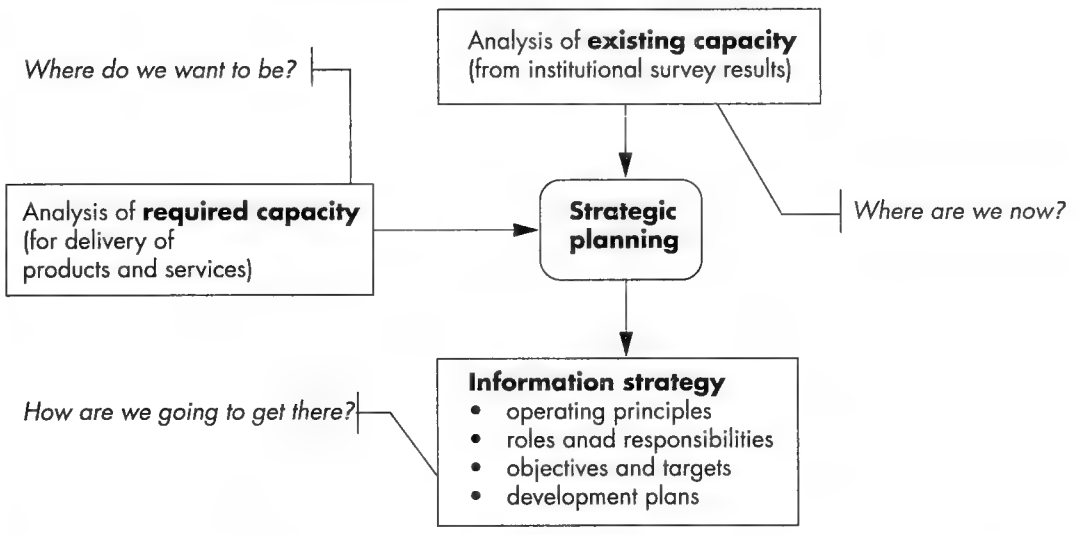
- Where are we now?
- Where do we want to be?
- How are we going to get there?

The first question is addressed by the results of the institutional survey; the second by analysing which capacities are required to deliver the network's main products and services; and the third through the preparation of an information strategy.

4.2 Information strategy

Typically, a network information strategy contains a statement of operating principles, covering the goals of the network, its membership, form of cooperation and organizational structure. It goes on to describe the major products and services which the network aims to deliver, and the users for whom these are designed (for example, see BCIS 1996). The roles and responsibilities of the network's partners are also highlighted and, where appropriate, specific objectives and targets for information production are assigned to them. Finally, the strategy contains plans for the development of the network's capacity in areas which have been identified as crucial to its success (for example, see Government of Sri Lanka 1996b, Government of Egypt 1997 or Government of Thailand 1997). These may include extensive detail, for example projected sources of data, job descriptions and procurement plans, confined to annexes.

Figure 4: The strategic planning process



It may be possible to implement parts of the strategy simply by improving coordination between organizations or sharing scarce resources. Also, the value of 'free' resources for capacity building should not be underestimated. For example, Internet-based literature, self-teaching tools, training materials and 'source books' for skills development are widely available from governments, non-governmental organizations and international organizations. Nevertheless, many information strategies will require direct financial support to implement and it is the role of senior managers within the network, coordinated by its steering committee, to facilitate access to financial resources in such cases. Potential sources of financial support are presented in box 2.

4.3 Development plans

Development plans are the heart of the information strategy. They range from brief concepts for small-scale projects, up to detailed proposals for the development of the network's data, expertise, facilities and partnerships (i.e., the areas covered by the survey). In order to maximize the benefits of network participation, individual organizations may wish to extend the development process to the operation of their internal management systems.

Typically, a development plan would include a set of clearly-defined objectives and targets for capacity development, plus preliminary indications of costs, time-scales and management responsibilities. Plans could be generated for the network as a whole, or be prepared for individual organizations—provided these also address the needs of the network as a whole. When presented in the form of sound business cases, development plans may prove useful in helping to convince potential sources of financial support to invest in the network.

Key areas in which to build information management capacity are reviewed below. The reviews necessarily are brief since, in any particular situation, local conditions, needs and perspectives are bound to dictate precise requirements.

- **Data**
  A network's datasets need to underpin the products and services it wishes to generate. The mobilization of data on essential themes should therefore be one of the network's top priorities. An early task is to determine which datasets are essential to the network's operation, and to ensure that the custodians (i.e., primary sources) of these have the capacity to manage them effectively. Capacity-building can then focus on the twin objectives of improving the quality and accessibility of the datasets.

Box 2: Sources of financial support for capacity-building

- Direct contributions from the network's partners.
- In-kind contributions from the network's partners (e.g., the exchange of data, expertise or other services).
- Implementation of joint projects with Government, industry or international organizations.
- Government grants or incentive schemes.
- Support from bilateral and multilateral development assistance agencies.
- Funds released by efficiency savings or from changes in government priorities

Responsibility for managing datasets can be identified using the principles of custodianship (see *Guide to Information Management*). Other fundamental techniques, relating to the storage, standardization and quality-assurance of datasets, can also be applied to the mobilization of datasets after management responsibility has been assigned.

- **Expertise**
  A network's expertise should reflect its needs for generating products and services, and may be very wide-ranging. They include the basic skills necessary to collect and process data, but also embrace the areas of publishing, communication and management, plus specialist areas, such as computer systems support, programming and electronic communications.

  Skills development can be addressed through a variety of learning processes, including formal education and training courses, lectures, seminars, informal workshops and discussion groups, and on-the-job coaching sessions. Secondments, study visits and self-study breaks are also popular and useful. Depending on the topic, some learning environments are more appropriate than others. For example, training in the use of computer software may be delivered directly in the workplace, perhaps using real problems to illustrate how the software is used. Conversely, training in matters of corporate policy and management may need to be tackled in discussion groups free from the everyday distractions of the workplace. In general, highly applied topics, such as the generation of information for policy-making, benefit from a combination of experience-sharing and formal instruction.

- **Facilities**
  The network's facilities should support its needs for information product development (see *Guide to Information Management*). Typical facilities embrace the equipment necessary to gather and process data, through to the facilities needed to publish and distribute information. Although computer equipment (including communication technologies) tends to dominate discussions of information management facilities, the need for physical infrastructure, such as buildings and transport, should also be considered.

  Requirements for facilities are best specified in functional terms (i.e. the tasks which need to be done), rather than focusing on particular equipment brands or models. The latter change very rapidly and should be selected on the basis of proven experience or following independent advice. A process of tender is often applied to the procurement of equipment, allowing quotations from a range of potential suppliers to be compared in advance of purchase (Aronoff 1991). Organizations may wish to share the burden of acquiring and maintaining facilities by doing so as a group, particularly where they are expensive or used only intermittently (e.g., specialist data collection or processing devices).

  When acquiring new facilities, due consideration should be given to training needs, running costs, maintenance and technical support. This is particularly relevant to computer equipment which, although not always essential, can significantly enhance information management capacity (see *Guide to Information Management*).

- **Management systems**
  The management policies, systems and procedures adopted by the network's partners bind together its physical assets into a cohesive information management capacity. They govern the quality of the contributions made by individual organizations to the network, and affect the degree to which constructive partnerships are formed.

Organizations evolve a particular style of doing things, based upon their histories, the personalities of their staff, and the degree to which they are constrained by bureaucracy and resources. Like human cultures, organizational 'cultures' evolve naturally and need not necessarily be changed unless they are ineffective. Where this is the case, change should be allowed to emerge from within the organisation, perhaps with external facilitation, unless exceptional circumstances prevail. For example, the organization may not be fulfilling its obligations to provide access to data, or may be failing to ensure the safety of its staff.

Organizations evolve their management systems in line with market demands, the expectations of society, and the opportunities created by new technologies. Sometimes this results in job losses, although it can be argued that the efficiencies gained serve to enhance the productivity (and therefore the prospects) of the organization in the long term. The pace of change has quickened over the last two decades, such are the opportunities presented by global markets and information technology. For example, many organizations have decided to replace their traditional management hierarchies with flexible, self-regulated teams.

When deciding how to enhance the management of an organization, staff at all levels should be engaged in consultation. Almost certainly, it is their vision which will unlock the potential of the organization. Consultation should not be rushed, since it may take considerable effort to assess, reconcile and consolidate the different views expressed. Typical areas to examine include project management, reporting and control, performance assessment, time management, management of human resources, and management of external cooperation.

- **Partnerships**

  Partnerships between organizations are a relatively unexploited form of capacity, with many organizations still preferring to duplicate each other's activities. Making partnerships an obvious, attractive way of doing business is one of the greatest challenges for an information network, and much progress still has to be made in that area.

  Partnership generally occurs at two levels: the management level, where formal agreements may be signed to develop or confirm long-term alliances; and at the operational level, where data and expertise can be given, bartered or sold to address urgent and immediate challenges. At the management level, formal ties, such as memoranda of understanding and 'twinning' arrangements, provide helpful frameworks in which to plan cooperative activities. At the operational level, cooperation can be facilitated through various cooperative activities, including joint project teams, shared training courses, seminars, workshops, formal secondments and by encouraging informal communications between staff.

  Ideally, the sharing of data, expertise and facilities should become an everyday activity amongst the network's partners. This can be promoted through the agreement of consistent principles, policies and procedures for cooperation, and by building trust through common objectives and a spirit of fair dealing.

REFERENCES

5 REFERENCES

Aronoff, S. 1991. *Geographic Information Systems: A Management Perspective*. WDL Publications, Ottawa, Canada.

BCIS 1996. *Biodiversity Conservation Information System: Programme Description*. BCIS Steering Committee, Gland, Switzerland. [http://www.biodiversity.org]

Government of Egypt 1997. *Biodiversity Data Management Plan*. National Biodiversity Unit, Egyptian Environmental Affairs Agency, Cairo, Egypt.

Government of Sri Lanka 1996a. *Directory of Information Sources for the Management of Biodiversity: 1996*. Biodiversity Cell, Ministry of Transport, Environment and Women's Affairs, Colombo, Sri Lanka.

Government of Sri Lanka 1996b. *Framework Biodiversity Action Plan: Development of Database, Collation of Available Information and Identification of Information Gaps*. Final Submission. Ministry of Transport, Environment and Women's Affairs, Colombo, Sri Lanka.

Government of Thailand 1997. *Thailand's Biodiversity Data Management Action Plan*. Office of Environmental Policy and Planning, Bangkok, Thailand.

Government of the United Kingdom 1995. *Biological Recording in the United Kingdom: Present practice and future development*. Volume 2: Appendices. Department of the Environment, London, UK.

Medyckyj-Scott, D., Cuthbertson, M. and Newman, I. 1996. Discovering environmental data: metadatabases, network information resource tools and the GENIE system. *Int. J. Geographical Information Systems*. Vol. 10, No. 1, pp 65-84.

NMK 1995. *Biodiversity in East Africa: Proceedings of the sixth regional workshop on biodiversity databases*. National Museums of Kenya, Nairobi, Kenya.

WCMC 1994. *Availability of Biodiversity Information in East Africa*. Compiled by the World Conservation Monitoring Centre. FAO, Dar es Salaam, United Republic of Tanzania.

ANNEX 1: SAMPLE COVERING LETTER

This letter represents the output of a fictitious National Biodiversity Committee attempting to survey sources of data and expertise which could contribute to the preparation of a National Biodiversity Strategy and Action Plan.

Survey of Biodiversity Information
in support of the National Biodiversity Strategy and Action Plan

Why are we conducting a survey?

The Government has embarked upon the preparation of a National Biodiversity Strategy and Action Plan to provide a framework for the conservation and sustainable use of the country's rich heritage of living resources. As one of the first steps in this process, we are attempting to survey sources of information which may be of use to policy-makers and resource managers in the public and private domains. In particular, we aim to identify key gaps in data, expertise and information management facilities which need to be addressed for improved availability of biodiversity information.

It should be stressed that the Government does not intend to use the survey results to relieve organizations of any of their data management responsibilities. Rather, the Government is attempting to help policy-makers, resource managers, researchers and the general public to gain access to information about biodiversity more easily than they have been able to before.

What benefits will this bring?

Two important products of the survey will be distributed to all participants in the survey, and more widely as appropriate. These are as follows:

1. **Catalogue of Biodiversity Data Sources**, containing details of key datasets and information sources relevant to the conservation and sustainable use of living resources. Once this is published, the Government intends to update it annually. The catalogue will summarise information about:
    - organisations managing biodiversity data
    - major datasets and information sources which are available (including access procedures)
    - relevant sources of expertise.
2. **National Biodiversity Information Management Plan**, detailing priority investments, efficiencies and collaborative programmes which will be implemented to enhance the management of biodiversity information.

In addition, your involvement in the survey provides an opportunity to review the current state of your information management capacity and to consider what steps, such as investments, efficiencies and partnerships, are required to enable your organisation to respond more effectively to national needs.

How will the survey be implemented?

The survey will be implemented through the use of two separate questionnaires, relating to **institutional details** and **datasets** respectively. **Only one** copy of the former should be completed per organization (or sub-organization as appropriate). Multiple copies of the latter may completed, one for **each** major dataset managed by the organization.

Will any help be available?

To help you complete the questionnaires, we have organised two half-day **workshops** during which we will walk you through the questions and address any difficulties you may have. If you would like to attend one of these workshops, please try to complete as much of the questionnaire as possible beforehand so that your difficulties are clearly identified. In addition to the workshops you are welcome to **telephone** this office at any time to discuss all aspects of the survey on 0129 228943.

When should the questionnaires be returned?

Questionnaires should be returned by September 1 1997, providing ample time for organizations to complete the forms and subject them to internal review. Remembering that this is as much your initiative as ours, we do hope that you respond both fully and quickly to the survey.

Thank you and good luck,

Chairperson
National Biodiversity Committee

ANNEX 2: SAMPLE QUESTIONNAIRE

Comprising: Form 1: Institutional details

Form 2: Datasets

Two separate forms are provided since most organizations have more than one dataset, and may have many datasets to describe, whereas institutional details need to be recorded only once.

Before using this questionnaire in practice, the organizers of the survey should consider reviewing and adapting the questionnaire to suit local conditions.

Form 1: Institutional details

(fill in one copy of this form per organization or sub-organization as appropriate)

CONTACT DETAILS

Name of organization: _____ **Acronym:** _____

Full postal address: _____

Telephone number: _____ **Fax number:** _____

Email: _____ **Web-site:** _____

Name of host organization(s) (if applicable): _____

Contact person: _____ **Position:** _____

Telephone number: _____ **Extension:** _____

DESCRIPTION

Which of the following best describes your organization (tick any which apply)?

❒ Governmental ❒ Semi-governmental ❒ Local authority
❒ Private ❒ Non-governmental ❒ Charity
❒ Profit ❒ Non-profit
Other (please specify):

At what levels does your organization operate ptick any which apply)?

❒ International ❒ National ❒ State (or similar) ❒ District (or similar)
❒ Local ❒ Community
Other (please specify):

What is the core business of your organization ptick any which apply)?

❒ Facilitation ❒ Coordination ❒ Regulation ❒ Administration
❒ Trade ❒ Industry ❒ Service ❒ Consultancy
❒ Resource management ❒ Nature conservation ❒ Environmental protection
❒ Policy ❒ Law ❒ Information/monitoring
❒ Research ❒ Education/training ❒ Outreach ❒ Lobbying
❒ Campaigning
Other pplease specify):

What is the annual turnover of your organization in US $ poptionally tick one)?

❒ <1K ❒ 1-10K ❒ 10-100K ❒ 100K-1M ❒ 1M-5M ❒ >5M

How many staff does your organization employ ptick one)?

❒ <10 ❒ 10-25 ❒ 25-50 ❒ 50-100 ❒ 100-250 ❒ 250

DESCRIPTION (CONT.)

Enter the mission statement of your organization:

Note any programmes or projects which may be relevant to this survey:

1. _____
2. _____
3. _____

Does your organization have an information strategy? ❒ yes ❒ no

Does it have a data quality policy? ❒ yes ❒ no

Does it have a data exchange policy? ❒ yes ❒ no

INFORMATION MANAGEMENT

Indicate whether your organization manages/uses/needs any of the following information:

		Manages	Uses	Needs
Land use	Forestry	❒	❒	❒
	Agriculture/livestock	❒	❒	❒
	Fisheries	❒	❒	❒
	Nature conservation	❒	❒	❒
	Indigenous peoples	❒	❒	❒
	Tourism	❒	❒	❒
	Water	❒	❒	❒
	Mining	❒	❒	❒
	Energy	❒	❒	❒
	Transport	❒	❒	❒
	Urban planning	❒	❒	❒
Other (please specify): _____		❒	❒	❒
_____		❒	❒	❒
Ecosystems	Forest	❒	❒	❒
	Woodland/scrub	❒	❒	❒
	Grassland	❒	❒	❒
	Heathland/moorland	❒	❒	❒
	Freshwater	❒	❒	❒
	Coastal and marine	❒	❒	❒
	Dryland/desert	❒	❒	❒

		Manages	Uses	Needs
	High altitude	❒	❒	❒
Other (please specify): _____		❒	❒	❒
_____		❒	❒	❒
Species/genes	Mammals	❒	❒	❒
	Birds	❒	❒	❒
	Reptiles/amphibians	❒	❒	❒
	Fish	❒	❒	❒
	Insects	❒	❒	❒
	Other invertebrates	❒	❒	❒
	Bacteria	❒	❒	❒
	Viruses	❒	❒	❒
	Plants (higher)	❒	❒	❒
	Plants (lower)	❒	❒	❒
	Germplasm/tissue	❒	❒	❒
	Genebanks	❒	❒	❒
Other (please specify): _____		❒	❒	❒
_____		❒	❒	❒
Social/economic/ political	Culture	❒	❒	❒
	Health, welfare and equity	❒	❒	❒
	Land tenure and property	❒	❒	❒
	Demography and population	❒	❒	❒
	Policies, plans and laws	❒	❒	❒
	Public administration and governance	❒	❒	❒
	Trade and industry	❒	❒	❒
	Sustainable development	❒	❒	❒
Other (please specify): _____		❒	❒	❒
_____		❒	❒	❒
Physical features	Hydrology	❒	❒	❒
	Geology	❒	❒	❒
	Soils	❒	❒	❒
	Topography	❒	❒	❒
	Climate	❒	❒	❒
Other (please specify): _____		❒	❒	❒
_____		❒	❒	❒

Indicate the number of staff in your organization with expertise in the following areas:

	Postgraduate	Graduate	Diploma	Short course	School leaver	Total
Strategic planning	_	_	_	_	_	___
Project management	_	_	_	_	_	___
Quality management	_	_	_	_	_	___
Data collection/monitoring	_	_	_	_	_	___
Data entry/quality-assurance	_	_	_	_	_	___
Data analysis	_	_	_	_	_	___
Technical writing	_	_	_	_	_	___
Graphic design/publishing	_	_	_	_	_	___
Communications/marketing	_	_	_	_	_	___
Management information systems	_	_	_	_	_	___
Geographic information systems	_	_	_	_	_	___
Database development	_	_	_	_	_	___
Systems management	_	_	_	_	_	___
Local area networks	_	_	_	_	_	___
Internet access/web-site	_	_	_	_	_	___
Public education/awareness	_	_	_	_	_	___
Training/workshops	_	_	_	_	_	___
Other technical assistance	_	_	_	_	_	___
Forestry	_	_	_	_	_	___
Agriculture/livestock	_	_	_	_	_	___
Fisheries	_	_	_	_	_	___
Nature conservation	_	_	_	_	_	___
Indigenous peoples	_	_	_	_	_	___
Tourism	_	_	_	_	_	___
Water	_	_	_	_	_	___
Mining	_	_	_	_	_	___
Energy	_	_	_	_	_	___
Transport	_	_	_	_	_	___
Urban planning	_	_	_	_	_	___
Environmental protection	_	_	_	_	_	___
Environmental impact assessment	_	_	_	_	_	___
Environmental economics	_	_	_	_	_	___
Health, welfare and equity	_	_	_	_	_	___
Land tenure and property	_	_	_	_	_	___
Demography and population	_	_	_	_	_	___
Policies, plans and laws	_	_	_	_	_	___
Public administration	_	_	_	_	_	___
Trade and industry	_	_	_	_	_	___
Sustainable development	_	_	_	_	_	___
Ecology	_	_	_	_	_	___
Biogeography	_	_	_	_	_	___
Conservation biology	_	_	_	_	_	___
Taxonomy/systematics	_	_	_	_	_	___

EXPERTISE (CONT.)

	Postgraduate	Graduate	Diploma	Short course	School leaver	Total
Hydrology	_	_	_	_	_	___
Geology	_	_	_	_	_	___
Soils	_	_	_	_	_	___
Climate	_	_	_	_	_	___
Other (please specify):						
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _	_	_	_	_	_	___
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _	_	_	_	_	_	___
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _	_	_	_	_	_	___

Which areas of expertise does your organization most need to develop?

1. _____
2. _____
3. _____

FACILITIES

Indicate what facilities your organization owns or has access to (in good working order):

Communications	Telephone	❒ yes	❒ no	
	Fax	❒ yes	❒ no	total:
	Email accounts	❒ yes	❒ no	total:
	Internet access points	❒ yes	❒ no	total:
Computers	IBM-PC 386 or lower	❒ yes	❒ no	total:
	IBM-PC 486 or higher	❒ yes	❒ no	total:
	UNIX workstation	❒ yes	❒ no	total:
	Macintosh	❒ yes	❒ no	total:
Other (please specify):	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
Operating systems	DOS	❒ yes	❒ no	
	Windows 3.1/3.11/95/NT	❒ yes	❒ no	
	UNIX/Linux	❒ yes	❒ no	
	Macintosh	❒ yes	❒ no	
	Local Area Network	❒ yes	❒ no	users:
Other (please specify):	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
Geographic information systems	PC-ARC/INFO	❒ yes	❒ no	users:
	Workstation ARC/INFO	❒ yes	❒ no	users:
	ArcView	❒ yes	❒ no	users:
	MapInfo	❒ yes	❒ no	users:
Other (please specify):	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _			

FACILITIES (CONT.)

Database management systems	xBASE	❒ yes	❒ no	users:
	Access	❒ yes	❒ no	users:
	Oracle	❒ yes	❒ no	users:
Other (please specify):	_____			
	_____			
Related software	Image processing	❒ yes	❒ no	users:
	Statistical/modelling	❒ yes	❒ no	users:
	Desktop publishing	❒ yes	❒ no	users:
	Graphics/presentation	❒ yes	❒ no	
Other (please specify):	_____			
	_____			
Data input/output	Digitising tables	❒ yes	❒ no	total/size:
	Scanners	❒ yes	❒ no	total/size:
	Plotters	❒ yes	❒ no	total/size:
	Colour printers	❒ yes	❒ no	total:
Other (please specify):	_____			
	_____			
Field survey	Vehicles	❒ yes	❒ no	total:
	Global positioning systems	❒ yes	❒ no	total:
	Laptop computers	❒ yes	❒ no	total:
Other (please specify):	_____			
	_____			
Miscellaneous	Library	❒ yes	❒ no	books:
	Photocopier	❒ yes	❒ no	total:
	In-house printing	❒ yes	❒ no	
Other (please specify):	_____			
	_____			

Which facilities does your organization most need to acquire or strengthen?

1. _____

2. _____

3. _____

Please provide details of the most important networks, steering groups or committees (relevant to biodiversity conservation) with which your organization is involved:

Network, steering group or committee	Coordinate	Facilitate	Participate	Support
	❒	❒	❒	❒
	❒	❒	❒	❒
	❒	❒	❒	❒
	❒	❒	❒	❒
	❒	❒	❒	❒

Estimate how many organizations regularly provide data or information *to* your organization:

Provide details of the most important of these as follows:

	Organization	Data or information provided	Formal agreement/MoU
1.			❒ yes ❒ no
2.			❒ yes ❒ no
3.			❒ yes ❒ no
4.			❒ yes ❒ no
5.			❒ yes ❒ no

Estimate how many organizations regularly receive data or information *from* your organization:

Provide details of the most important of these as follows:

	Organization	Data or information provided	Formal agreement/MoU
1.			❒ yes ❒ no
2.			❒ yes ❒ no
3.			❒ yes ❒ no
4.			❒ yes ❒ no
5.			❒ yes ❒ no

PARTNERSHIPS (CONT.)

Your organization may also share other resources, for example expertise and facilities.

Provide details of the most important of these as follows:

	Organization	Data or information provided	Formal agreement/MoU
1.			❒ yes ❒ no
2.			❒ yes ❒ no
3.			❒ yes ❒ no
4.			❒ yes ❒ no
5.			❒ yes ❒ no

Please provide details of any partnerships which are being planned in the near future:

	Organization	Proposed cooperation
1.		
2.		
3.		

CONCLUSION

How could your organization contribute most effectively to a biodiversity information network?

1. _____
2. _____
3. _____

What would you expect from such a network?

1. _____
2. _____
3. _____

Form 2: Datasets

(fill in one copy of this form per dataset managed by your organization or sub-organization as appropriate)

CONTACT DETAILS

Title of dataset: _____

Contact person: _____ **Position:** _____

Telephone number: _____ **Extension:** _____

DESCRIPTION

Source of data (tick any which apply):

❒ Primary research ❒ Acquired copy ❒ Public domain ❒ Mixture

Other (please specify): _____

_____

_____

If not primary research, please indicate the original source(s): _____

_____

_____

_____

Form of data (tick any which apply):

❒ Hard copy ❒ Audio-visual ❒ Electronic files ❒ Mixture

Other (please specify): _____

_____

Type of data (tick any which apply):

❒ Books/reports ❒ Sound recordings ❒ Word processor files ❒ Mixture

❒ Forms/notes/tables ❒ Photographs ❒ Spreadsheet

❒ Pictures ❒ Video/film ❒ Database

❒ Card index ❒ GIS coverage

❒ Maps ❒ Other digital files

Other (please specify): _____

_____

DESCRIPTION (CONT.)

Geographic coverage of data (tick any which apply):

❒ International ❒ National ❒ State (or similar) ❒ District (or similar)

❒ Local ❒ Community ❒ Dispersed ❒ Mixture

Specify more exactly: _____

_____

Thematic coverage of data (tick any which apply):

❒ Land use ❒ Physical features ❒ Social/economic/political

❒ Ecosystems ❒ Species ❒ Genes ❒ Mixture

Specify more exactly:

Time period of data (tick any which apply):

❒ Pre-history ❒ Pre-1900 ❒ Post-1900 ❒ The future

Specify exactly from: _____ to: _____

PURPOSE

For what purpose was the dataset originally built?

1. _____
2. _____
3. _____
4. _____

Indicate any uses it has been put to subsequently:

1. _____
2. _____
3. _____
4. _____

PURPOSE (CONT.)

Are there any uses of the data which would be unwise or improper?

	Use	Unwise	Improper
1.		❒	❒
2.		❒	❒
3.		❒	❒
4.		❒	❒
5.		❒	❒

Indicate the current limitations, uncertainties and errors in the data:

		Limitation	Uncertainty	Error
1.		❒	❒	❒
2.		❒	❒	❒
3.		❒	❒	❒
4.		❒	❒	❒
5.		❒	❒	❒

What is the life-expectancy of the data (tick one)?

❒ Everlasting ❒ >10 years ❒ >5 years ❒ >1 year ❒ >six months

❒ Immediate future only

DATA DEVELOPMENT

When did the development of the dataset begin?

_____

_____

Describe how the data were originally obtained: _____

_____

_____

Indicate which data standards were followed, if any: _____

_____

Data standard

1. _____
2. _____
3. _____

Describe the main processing, interpretation and quality-assurance tasks which were later applied:

Task applied	Processing	Interpretation	QA
1.	❒	❒	❒
2.	❒	❒	❒
3.	❒	❒	❒
4.	❒	❒	❒

Which of the following best describes the status of the data (tick one)?

❒ Complete ❒ Nearing completion ❒ Under development ❒ Early stages of development

DATA MANAGEMENT

Are the data actively managed? ❒ yes ❒ no

How many people help manage the data (tick one)?

❒ None ❒ 1 ❒ 1-5 ❒ >5 ❒ >10

How regularly are they updated (tick one)?

❒ Every day ❒ Every week ❒ Every month ❒ Every quarter

❒ Every six months ❒ Every year ❒ Every two years ❒ Every five years

❒ Every ten years ❒ Never ❒ No need

Other (please specify): _____

_____

When were they last updated? _____

_____

ACCESS PROCEDURES

Which of the following best describes access to the data (tick one)?

❒ Unrestricted ❒ Restricted to some ❒ Restricted to most ❒ Unavailable for external use

Where access is provided, which of the following applies (tick one)?

❒ Free ❒ Free to most ❒ Free to some ❒ Charged

Where charges are made, how are these determined (optionally tick one)?

❒ Cost recovery ❒ Cost plus overhead ❒ Market value

Where access is provided, in what formats are the data available (tick any which apply)?

❒ Hard copy ❒ Floppy disk ❒ CD-ROM ❒ Email

❒ Internet (FTP) ❒ Magnetic tape ❒ DAT ❒ Private network

Other (please specify): _____

_____

Has the dataset been documented for external users? ❒ yes ❒ no

Where access is provided, briefly describe the recommended access procedures:

_____

_____

_____

_____

_____

THANKS

Congratulations on completing this questionnaire. Your efforts are much appreciated. Please return the questionnaire as soon as possible.